Students wishing to start in this area would be well advised to stick to established texts, or, at the expense of a few postcards to selected authors, obtain pre-prints on their chosen subject.

R. J. HENERY

CSASZAR, A., *General topology* (Adam Hilger, 1978), 488 pp., £20·50.

This comprehensive treatise on general topology is heavily influenced by the book "Topological spaces", by E. Čech, assisted by Z. Frolíc and M. Katětov (Interscience, 1966), and so it is natural to compare the two works. The scope of the present work is clear from the chapter headings: 1. Introduction, 2. Topological spaces, 3. Proximity and uniform spaces, 4. Completely regular spaces, 5. Complete and compact spaces, 6. Extensions of spaces, 7. Product and quotient spaces, 8. Paracompact spaces, 9. Baire spaces, 10. Connected spaces, 11. Topological groups. A novel feature of the book is the early introduction of proximities and uniformities. In contrast to Čech's book, the language is less formal and consequently the present work is much more readable. There are many examples in the text and numerous exercises at the end of each section. This is not an introductory text on topology. However the wealth of material presented should prove invaluable to the research worker in topology and related disciplines.

H. R. DOWSON

ANDRÁSFAI, BÉLA, *Introductory Graph Theory* (Adam Hilger, 1977), 268 pp., £8·00.

This is a translation by András Recski of a book which first appeared in Hungary in 1969. It was another Hungarian author, Dénes König (written in German), who gave the world the first book on graph theory in 1936, and for many years *Theorie der endlichen und unendlichen Graphen* had no competitors. However, in recent years there has been no shortage of publications, about a dozen of them in English, so it is natural to ask if this translation is really necessary. I consider the answer to be: perhaps not necessary, but certainly valuable.

The justification of this book lies in its method of communication. The author passionately believes that graph theory is an excellent means of developing problem-solving ability, where advanced knowledge is not necessary, but where ingenuity and deep consideration are often called for. The book is therefore written around problems: "The results are presented *in statu nascendi*, following the procedure of discovery, solution of sub-statements, definition of new concepts which prove to be useful, and determination of the possibilities of generalisation for the solution of practical problems. Exercises, problems and their solutions are given throughout, with suggestions of new problems, simplification of complicated statements, and, above all, stimulation of readers." The result is a book which is different; it reads more like a mathematical detective story than a book of theorems, and it is accordingly more suited to private reading than to prescription as a text for a course of lectures.

The choice of material, too, differs from the norm for an introductory text. There is no mention at all of "topological" graph theory, so Euler's formula and the four colour theorem are not dealt with. The seven chapters deal with: (1) basic ideas, (2) trees and forests (including spanning trees and the circuit space of a graph), (3) routes following the edges of a graph (Eulerian graphs), (4) routes covering the vertices of a graph (Hamiltonian circuits, including the theorems of Dirac and Pósa), (5) matchings (of bipartite graphs, using alternative paths, and the König max-min theorem), (6) extremal graph theory (including some Ramsey theory), (7) solutions to exercises.

Although the ideas develop from simple problems, this is by no means an easy book. Some of the arguments, particularly in chapters 5 and 6, are quite involved, and the reader who perseveres will undoubtedly emerge with wits sharpened and a greater respect for proof by contradiction. It is in chapter 6 in particular that the Hungarian school of graph theory, carefully nurtured by Erdös, is most evident. The "extremal" graph theory here can be illustrated by the following simple example: if a graph with n vertices and e edges has no triangles, then $e \leqslant [n^2/4]$, equality occurring only for specified extremal graphs. A generalisation of this result has a nice application due to Erdös: if we have $3s$ points in the plane ($s \geqslant 2$), such that the distance between any two is at most 1, then at most $3s^2$ of the distances between points are greater than $1/\sqrt{2}$.

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